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THE FEEDING OF GRAIN AND OTHER CONCENTRATES IN THE SOUTHEAST

By

Roger P. Matteson
Associate Agricultural Economist

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THE FEEDING OF GRAIN AND OTHER CONCENTRATES IN THE SOUTHEAST

ACCURATE FEED ESTIMATES NEEDED

The demand for livestock products produced in the United States has increased because of the needs of our armed forces and those of our allies, but even more important has been the enlarged purchasing power of our own population. Fortunately, large stocks of wheat and corn were accumulated during pre-war years and have been available for feeding. These are being depleted rapidly, and it will soon be necessary to adjust livestock production to a level consistent with current feed production. Although the 1943 crop is good it will not be as large as in 1942. The 1943 crop is, however, larger than the crop of 1941.

The effects of the restricted feed supplies will be particularly severe in deficit areas such as the Southeast. Because of increased numbers of most classes of livestock, this region needs considerably greater than usual imports of grain and mill feeds. Similar expansions have been made in livestock in other parts of the country. Because of the tendency for feed supplies to be held in areas where produced, and because of increased needs for concentrates in other deficit areas, supplies shipped to the Southeast have been reduced. In fact, little corn has been shipped in for several months. Without the supply of Government feed wheat, the situation would have been serious. The demand for commercial feeds has increased greatly, and during the year feed manufacturers have had considerable difficulty in meeting it. In recent months, a critical situation has existed because of the shortage of both animal protein and oil meal. In view of the present and prospective numbers of livestock and the probable supplies of feed, it appears that the feed situation will become more acute, and that it may force some costly adjustments in livestock production. This study of livestock feeding rates should make possible a better accounting of feed needs in comparison with available supplies.

SCOPE AND METHOD OF THIS STUDY

This report is limited mainly to considerations of the adequacy of the supply of grain and other concentrate feeds in Georgia, Alabama, and South Carolina. The estimates of feed needs are based upon all the available evidence which has been accumulated in recent years about the rates of feeding livestock in these States. Published data of the United States Department of Agriculture have been used to determine the quantities

of feed crops produced, the numbers of livestock on hand, and the quantities of livestock products obtained. 1/ Estimates of quantities of grains imported from other regions, and quantities used for purposes other than livestock feeding have been compiled from a variety of sources. Grain imports were approximated from Interstate Commerce Commission reports of shipments on railroads, United States Army Engineers' data on barge shipments, and United States Department of Commerce statistics on imports from foreign countries. This information was supplemented with information obtained from operators of feed and grist mills, brokers, and dealers concerning the quantities of grain used and the proportion imported. Quantities of corn used for human food have been estimated from food consumption studies made by the Bureau of Human Nutrition and Home Economics, and from the Bureau of Agricultural Economics data showing the quantity of corn used by farm families. This information has been supplemented by inquiry of mills and stores. The total quantities of grain used for purposes other than feeding were subtracted from the total supplies to get the net quantities used for livestock. 2/ Commercial feed estimates are based upon available data regarding the production and use of oil seed crops, the milling of corn and wheat, and railroad imports. Figures of total commercial feed sales were furnished by the administrators of the feed sales tax in each of the States. Inquiry was made of feed manufacturers, dealers, brokers, and oil mills for further information on the kinds and proportions of commercial feeds handled.

When the net quantities of feedstuffs used in the States had been determined, it was then necessary to estimate the division among different classes of livestock. Because of the scarcity of reliable information, this was a task of considerable difficulty and the results should be recognized as tentative. Sources of information used for estimating this distribution to the various classes are as follows:

1. Estimated rates of feeding used in a study of foods and feed needs in Georgia, Alabama, and South Carolina, made by the Bureau of Agricultural Economics in cooperation with the Agricultural Colleges and Experiment Stations in 1938. 3/

1/ Published in Crops and Markets, annual statistical yearbook, and various special reports about crop and livestock production and utilization.

2/ See tables 14 and 15, appendix.

3/ Reported in the following Regional Circulars of the U. S. Dept. of Agr., BAE published 1939: Food and Feed Needs in Alabama, Food and Feed Needs in Georgia, and Food and Feed Needs in South Carolina.

2. Rates of feeding obtained by inquiry of farmers in farm management studies in a number of selected counties within the region in recent years.

3. Requirements estimated from standards found in Feeds and Feeding by F. B. Morrison, twentieth edition, adapted as nearly as possible to local conditions.

4. Rates of feeding found in farm cost accounting studies in Ohio and Illinois.

5. Rates of feeding commercial broilers from feed manufacturers and the Poultry Department of Georgia State Agricultural College.

6. Opinions of livestock extension specialists in Georgia.

7. Estimated rates of feeding made by the Bureau of Agricultural Economics for all States in the United States for the period 1938-40.

Preliminary estimates of the quantities of grain fed per animal for each class of livestock were made first. These were then multiplied by the numbers of animals in each class for a preliminary total, after which the total fed to all classes was compared with the known quantity available for feeding. The feeding rate for each class was then adjusted to fit the known supply. Computations were made on a crop-year basis--October 1 to September 30. This was done because the harvest of corn, the main feed crop, usually gets underway early in October and the annual inventory of corn on hand is reported at this date. Also, livestock numbers reported for January can be used more satisfactorily with crop year feed estimates than with the calendar year estimates. The feed balance begins with the crop year 1938-39 and extends through the crop year 1941-42. Estimates of the adequacy of feed supplies have also been prepared for the crop year October 1, 1942 - September 30, 1943.

Rates fed per animal vary appreciably with the relative abundance of feed in any particular year. In spite of the short crop of 1939, supplies were generally above average in this 4-year period. An adjustment has been made in the rates of grain feeding in line with the average production of a longer period of years. This makes them more useful for an analysis of future feed grain needs when average rates of production are expected.

Estimates of the proportion of mixed feed fed to the various classes of animals were based upon manufacturers' records and estimates, together with an estimate by the State Feed Inspector in Georgia. The rate of feeding was determined for each class by comparing the total quantities

and the numbers of animals in 1941. Rates for the other years were calculated by adjusting these rates to the numbers of animals in the various classes and the total quantity sold. As the rates of feeding mixed feed were expanding throughout this period, it is assumed that the rates found for 1941-42 were most representative of future normal expectations.

It is recognized that the lack of definite information about a number of factors, such as the following, detracts from the accuracy of the estimates made:

1. Quantities of some crops harvested by livestock, especially cowpeas and soybeans.

2. The distribution of the milk produced for use as food for the family and for feed for calves, hogs, and poultry.

3. Quantities of kitchen waste fed to hogs and poultry.

4. Quantities of grain and other crops gleaned after harvest by animals.

5. Numbers of livestock in towns.

6. Production, inshipments, carry-over, and uses of various mill byproduct feeds.

7. Quantities of low-grade roughage.

8. Productivity and use of pasture.

The utilization of roughages has an important bearing upon the use of all feeds, and should be studied to round out the description of the feeding patterns in the region. It is omitted from this report because of the lack of time needed for making a satisfactory determination. The statistics of hay and forage production in themselves are insufficient to provide a satisfactory picture of roughage feeding. Important quantities of low-grade roughages are fed, such as straw, cornstalks, and cottonseed hulls, but little information is available as to the actual quantities used. Considerable use is made of crop aftermaths and weed growth. Little is known definitely about the productivity of farm pastures, which varies widely between areas and farms. It is believed that an intensive study of roughage and pasture utilization in well-selected local areas would add much to the understanding of feeding in the region.

It should also be mentioned that over-all averages on a State-wide basis have weaknesses that prevent them from being ideal measures of rates of feeding. Feeding practices vary considerably between different areas in these States, especially where different types of feed crops are grown. Also, there are wide differences between the feeding by commercial poultrymen and dairymen, and feeding of farm poultry flocks and milk cows kept for home consumption. An accurate determination of the feeding rates under each of these different conditions would furnish a sound foundation for the estimation of feed requirements both in local areas and for the State. In spite of their limitations, however, state-wide averages can be used satisfactorily for estimating feed needs during the war emergency.

ESTIMATING RATES OF CONSUMPTION OF GRAIN AND MIXED FEED

The estimated normal feeding rates are considered to be representative of conditions during recent years (table 1). Variations between the rates of feeding for the same class of livestock in the different States are due to the following factors: (1) differences in the relative supplies of grain and mixed feed; (2) differences in feeding practices; and (3) varying supplies of other feeds. The large difference in the quantities of grain fed per hundredweight of hogs between the States is due mainly to the feeding of peanuts. In Georgia and Alabama an important proportion of the hogs is raised and fattened mainly on peanuts. Peanut-fed hogs are, however, relatively more important in Georgia than in Alabama. In the different peanut-producing areas in the Coastal Plain of Georgia it is estimated that hogs consume an average of between 100 and 200 pounds of peanuts and considerably less grain than in the rest of the State. In the mountain and Piedmont areas, the estimated rates of feeding are similar to the South Carolina rates.

In 1942-43 changed conditions have increased the feed requirements of some classes of livestock to such a degree that revised estimates of their requirements have been made, (table 2).

Reports from the commercial broiler area of Georgia this year indicate that it is taking about 2 weeks longer than usual to raise the chicks to the desired weight. This is due in part to the changed composition of feed resulting from the necessary substitution of a considerable amount of vegetable protein for animal protein. Other factors include a probable reduction in chick quality, crowding in the brooder, and poorer management by new operators. Considering the usual feeding period to be 12 weeks, this indicates an increase of about one-sixth in the feed requirements of broilers. Requirements this year, therefore, are estimated to be increased by this proportion.

Table 1.- Estimated normal rates of feeding grain and commercial mixed feed, Georgia, Alabama, and South Carolina

Class of livestock by states	Grain fed per head			Commercial mixed feed fed per head
	Total	Fed as grain	In mixed feed	
	Lbs.	Lbs.	Lbs.	Lbs.
Hens and pullets, Jan. 1: 1/				
Georgia	35.6	29.8	5.8	11.5
Alabama	36.7	29.6	7.1	14.2
South Carolina	40.8	33.0	7.8	15.5
Chickens raised, farm flocks:				
Georgia	14.6	11.8	2.8	4.7
Alabama	15.1	11.9	3.2	5.3
South Carolina	16.6	12.8	3.8	6.4
Commercial broilers, all states 2/	5.3	--	5.3	8.0
Turkeys raised:				
Georgia	61.6	55.2	6.4	11.5
Alabama	66.6	59.0	7.6	13.7
South Carolina	63.2	56.6	6.6	11.9
Milk cows, Jan. 1: 1/				
Georgia	609	572	37	151
Alabama	758	711	47	192
South Carolina	635	578	57	234
Other cattle, Jan. 1: 1/				
Georgia	134	118	16	27
Alabama	204	183	21	35
South Carolina	311	285	26	42
Hogs, per cwt. raised:				
Georgia	269	265	4	9
Alabama	340	329	11	26
South Carolina	468	462	6	16
Horses and mules, Jan. 1: 1/				
Georgia	2,504	2,462	42	60
Alabama	2,524	2,422	102	146
South Carolina	2,629	2,584	45	64

1/ The feeding rates are based on the number of animals reported Jan. 1

2/ Broilers are estimated to average less than $2\frac{1}{2}$ lbs.

Table 2.- Estimated rates of feeding grain and commercial mixed feed required in 1942-43, Georgia, Alabama, and South Carolina

Class of livestock by states	Grain fed per head			Commercial mixed feed fed per head
	Total	Fed as grain	In mixed feed	
	Lbs.	Lbs.	Lbs.	Lbs.
Hens and pullets, Jan. 1: 1/				
Georgia	42.4	35.5	6.9	13.7
Alabama	43.7	35.2	8.5	16.9
South Carolina	48.6	39.3	9.3	18.5
Chickens raised, farm flocks:				
Georgia	16.5	13.3	3.2	5.3
Alabama	17.0	13.4	3.6	6.0
South Carolina	18.7	14.4	4.3	7.2
Commercial broilers, all states	6.2	--	6.2	9.3
Milk cows, Jan. 1: 1/				
Georgia	640	601	39	159
Alabama	773	725	48	195
South Carolina	647	589	58	241
Other cattle, Jan. 1: 1/				
Georgia	139	122	17	28
Alabama	204	183	21	35
South Carolina	311	285	26	42
Hogs, per cwt. raised				
Georgia	282	278	4	10
Alabama	360	349	11	28
South Carolina	497	490	7	17

1/ The feeding rates are based on the number of animals reported Jan. 1.

In the case of farm flocks it is believed that the same factors are present, although the degree to which they affect ordinary farm chickens is less certain. It is estimated that farm chickens in these States get about a third of their feed from salvage materials picked up around the farm, which includes animal protein in insects, et cetera. For this reason it was assumed that the lessened quality of purchased feed would increase their requirements only about half as much as those of the broilers. Assuming that the increased number of farm chickens would have the same supply of such materials, it is estimated that about 3 pounds more feed would have to be fed per hen, or 7 percent of the normal quantity. Statistics of egg production indicate a small increase in egg production per hen in this region. It is estimated that this has been brought about with a 2 percent increase in feed. Combining the estimated increase in requirements from these three sources indicates an increase of 19 percent for laying flocks. For chickens raised in farm flocks an increased requirement of 13 percent was assumed, of which about a third is estimated to be necessary because of decreased amounts of salvage materials available per chicken.

Because of the increased numbers of hogs in relation to supplies of waste materials and some other minor sources of feed, it is estimated that the requirements of hogs have been increased by 5 percent in Georgia and 6 percent in Alabama and South Carolina. For milk cows it is assumed that the small increase in production per cow was brought about with a 2 percent increase in the quantity of concentrate feeds.

LIVESTOCK NUMBERS AND PRODUCTION, 1938 TO 1943

Changes in numbers of livestock since 1938 have followed a similar trend in Alabama, Georgia, and South Carolina, (table 3). Numbers of most kinds of livestock were relatively stable before the 1941-42 crop year. Supplies of feeds produced appear to have had a major influence on the numbers in each State. All classes of animals except workstock have increased in numbers since the entrance of the United States into the war. Milk cows were only slightly greater in number in 1943 than the 4-year average, 1938 to 1942, but other cattle have increased about 12 percent. The more important concentrate-consuming classes of livestock, hogs and poultry, have increased relatively more than the other classes.

Production of hogs in the three States declined each year after 1938, reaching a low in 1940-41. This is believed due to low supplies of feed grain in the 1939-40 crop year. Since the crop year 1940-41 production of pork has increased significantly in each State, with the estimated 1942-43 production 20 to 24 percent greater than 1941-42, and 20 to 28 percent greater than the previous 4-year average. Fewer hens and pullets

Table 3.- Number of livestock on farms in Georgia, Alabama, and South Carolina, 1942-43, 1941-42, 1940-41, 1939,40, and 1938-39

Class of livestock	Number						Percentage, 1942-43	
	1942-1943	Av. Oct. 1938 to Sept. 1942	1941-1942	1940-1941	1939-1940	1938-1939	of 4-year average	of 1941-1942
	1,000	1,000	1,000	1,000	1,000	1,000	Percent	Percent
Georgia								
Hens and pullets, Jan. 1	8,562	6,966	7,630	6550	6,978	6,707	123	112
Chickens raised, farm flocks	17,280	15,346	15,745	15,491	14,280	15,870	113	110
Commercial broilers, raised	17,600	4,850	9,500	5,400	3,000	1,500	363	185
Turkeys raised	140	113	122	117	111	101	124	115
Milk cows, Jan. 1	391	388	380	386	394	390	101	103
Other cattle, Jan. 1	660	594	631	601	584	559	111	105
Hogs, cwt. produced	4,041	3,195	3,366	2,854	3,145	3,415	126	120
Workstock, Jan. 1	342	360	355	351	367	368	95	96
Alabama								
Hens and pullets	8,337	6,809	7,525	6,282	6,745	6,684	122	111
Chickens raised, farm flocks	16,650	13,350	15,305	14,320	11,057	12,660	125	108
Commercial broilers, raised	1,000	125	500	--	--	--	800	200
Turkeys raised	150	128	137	139	125	113	117	109
Milk cows, Jan. 1	438	424	425	431	423	415	103	103
Other cattle, Jan. 1	702	627	661	633	627	586	112	106
Hogs, cwt, produced	2,624	2,056	2,128	1,747	2,112	2,239	128	123
Workstock, Jan. 1	360	366	358	363	372	373	98	101
South Carolina								
Hens and pullets, Jan. 1	4,222	3,564	3,933	3,420	3,569	3,335	118	107
Chickens raised, farm flocks	10,856	8,813	9,706	9,137	8,560	7,850	123	112
Commercial broilers, raised	4,000	2,225	3,100	2,400	1,900	1,500	180	129
Turkeys raised	170	148	146	147	156	141	115	116
Milk cows, Jan. 1	179	177	177	178	176	178	101	101
Other cattle, Jan. 1	187	165	178	168	160	154	113	105
Hogs, cwt, produced	1,526	1,268	1,229	1,149	1,365	1,329	120	124
Workstock, Jan. 1	202	204	202	203	205	205	99	100

were reported on farms in Georgia and Alabama in 1940-41 than at any time during the 4-year period, but large increases were reported for the following 2 years. This year (1943) they are 23 percent greater than the 4-year average in Georgia, 22 percent in Alabama, and 18 percent in South Carolina. Increases in numbers of chickens raised in farm flocks have been somewhat more than that of hens and pullets in Alabama and South Carolina. The 10 percent increase in chickens raised in Georgia since 1941-42 is similar to that of the other States, but the increase over the 4-year average is not as great.

Commercial broiler production has been growing rapidly during this period. In South Carolina the number of broilers almost trebled in 1943. In Georgia, the production in 1941-42 was about 6 times as great as in 1938-39, and this year's production is probably almost double that of last year. Apparently, broiler production is starting on a small scale in Alabama. Turkeys have been increasing steadily but are yet relatively unimportant.

The increase in livestock production in the concentrate consuming classes have an important bearing on the feed situation. The heavy increase in broiler numbers has greatly enlarged the demand for commercial mixed feed. The increase in farm poultry has increased the need for both commercial feed and grain. The increase in hogs has an important effect on the need for grain. In the Coastal Plain areas it may result in the grazing of acreages of peanuts originally intended for harvest.

REQUIREMENTS OF GRAIN FOR FEEDING

The production of feed grains within each State has been the main factor influencing total annual consumption by livestock in recent years. The total fed in 1941-42 was a little less than the 4-year average in Georgia and South Carolina (table 4). This happened in spite of somewhat increased numbers of livestock and was due to somewhat limited supplies of feed grains. Alabama, on the other hand, had quite abnormally large crops of feed grains for feeding that year and the amount fed was 19 percent more than the 4-year average. It is apparent that the average feeding rates for the 4-year period are the best basis for comparison.

The 1942-43 requirements were calculated by multiplying the numbers of animals in each class by the revised rates of feeding already described in the section entitled, "Estimated Rates of Consumption of Grain and Mixed Feed," and in table 2. The total requirements of grain for feeding as grain as thus determined for 1942-43 are 12 percent greater than for the previous 4 years in Georgia; 18 percent greater in Alabama; and 14 percent greater in South Carolina. The added quantities needed are 151,000 tons in Georgia, 208,000 tons in Alabama, and 107,000 tons in South Carolina.

Table 4.- Quantities of grain fed as grain in Georgia, Alabama, and South Carolina: Estimated requirements 1942-43, and amounts fed 1941-42 and annual average Oct. 1, 1938 - Sept. 30, 1942

State and class of livestock	Requirements 1942-43	Quantities fed		1942-43 requirements as percentage of quan. fed	
		1941-42	Average Oct. 1938-Sept. 1942	1941-42	Average Oct. 1938 - Sept. 1942
	1,000 tons	1,000 tons	1,000 tons	Percent	Percent
Georgia					
Hens and pullets	152	115	108	132	141
Chickens raised, farm flocks	115	94	94	122	122
Turkeys	4	3	3	133	133
Milk cows	117	110	116	106	101
Other cattle	40	38	36	105	111
Hogs	662	453	441	124	127
Workstock	421	444	462	95	91
Total	1,411	1,257	1,260	112	112
Alabama					
Hens and pullets	147	129	101	114	146
Chickens raised, farm flocks	112	106	79	106	142
Turkeys	5	5	4	100	125
Milk cows	159	175	151	91	105
Other cattle	64	70	57	91	112
Hogs	458	406	338	113	136
Workstock	436	503	443	87	98
Total	1,381	1,394	1,173	99	118
South Carolina					
Hens and pullets	83	64	61	130	136
Chickens raised, farm flocks	78	62	58	126	134
Turkeys	5	4	4	125	125
Milk cows	53	51	53	104	100
Other cattle	26	25	24	104	108
Hogs	374	282	302	133	124
Workstock	261	259	271	101	96
Total	880	747	773	118	114

QUANTITY OF GRAIN AVAILABLE FOR FEEDING

The total supplies of corn and oats available for all purposes were computed for each year by adding net imports to the total production of grain (table 5). For corn, this total was corrected each year for differences in inventory of stocks on hand on farms October 1 at the beginning and the end of each crop year. A similar correction was made for oats by the difference of July 1 stocks. The amounts used for other purposes--seed, human consumption, and mixed feed manufacture-- were subtracted from the total supplies to obtain the net amount available for feeding to livestock. 4/ Quantities of wheat used for feeding were estimated from the reported quantity of farm-grown wheat fed. Quantities of barley, rye, and other grains used for feeding were estimated from amounts of these farm-grown grains reported fed, and available statistics of imports by rail and barge.

The total net imports of corn, oats, and other grains then were subtracted from the total quantity of grain available for livestock feeding each year. The remainder is the amount of grain that would have been available for feeding from local production, assuming that other uses would have remained the same in the absence of imports.

A similar estimate of the total quantity of locally produced grain available for feeding in 1942-43 was derived by estimating the quantities needed for purposes other than feeding as grain, and subtracting the total from the reported production of the 1942 crops. The quantity of imported grain needed has been estimated by comparing this with the total requirements for livestock feeding this year, (table 5). Thus, for Georgia, a difference of 396,000 tons is indicated between the available local supplies of grain for feeding and the estimated requirements. This deficit is 310,000 tons greater than the average imports of the previous 4 years, which were 86,000 tons. By similar comparison, Alabama needs 178,000 tons more of feed grains this year than the average of the previous 4 years, and South Carolina needs 154,000 tons. In terms of corn-equivalent this means that Georgia needs to import 11,071,000 bushels more than usual; Alabama, 6,357,000 bushels; and South Carolina, 5,500,000 bushels. This added quantity of imports needed in 1942-43 amounts to about 25 percent of the average of grain used for feeding during the past 4 years in Georgia; 15 percent in Alabama; and 20 percent in South Carolina.

Estimated needs during 1942-43 are based upon the assumption of maintaining the levels of feeding and of production per head of chickens, commercial broilers, turkeys raised, and work animals; and small increases

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4/ See appendix, tables 14 and 15.

Table 5.- Grain for feeding as grain: Total quantities available, net imports and quantities available from State production 1942-43 and period Oct. 1, 1938 - September 30, 1942, Georgia, Alabama, and South Carolina

State and item	Estimated amount 1942-43	Quantity available: Av. Oct. 1938 to Sept. 1942	1941-1942	1940-1941	1939-1940	1938-1939
	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons
Georgia						
Total available for feeding:						
Corn		1,100	1,091	1,060	972	1,276
Oats		142	144	137	147	140
Wheat		11	13	12	10	8
Other grains		7	9	7	7	7
	1/ 1,411	1,260	1,257	1,216	1,136	1,431
Net imports: 2/						
Corn		66	103	56	74	31
Oats		14	8	16	19	13
Other grains		6	7	5	6	6
	3/ 396	86	118	77	99	50
Quantity available from State production	1,015	1,174	1,139	1,139	1,037	1,381
Alabama						
Total available for feeding:						
Corn		1,110	1,318	1,033	890	1,198
Oats		57	69	43	59	56
Wheat		1	1	1	1	(4/)
Other grains		5	6	4	5	5
	1/ 1,381	1,173	1,394	1,081	955	1,259
Net imports: 2/						
Corn		114	136	118	141	61
Oats		14	12	12	20	14
Other grains		1	1	1	1	(4/)
	3/ 307	129	149	131	162	75
Quantity available from State production	1,074	1,044	1,245	950	793	1,184

Continued -

Table 5.- Grain for feeding as grain: Total quantities available, net imports and quantities available from State production 1942-43 and period Oct. 1, 1938 - September 30, 1942, Georgia, Alabama, and South Carolina - Continued

State and item	Estimated amount 1942-43	Quantity available: Av. Oct. 1938 to Sept. 1942	1941-1942	1940-1941	1939-1940	1938-1939
	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons
South Carolina						
Total available for feeding:						
Corn		590	552	547	635	626
Oats		167	173	172	170	152
Wheat		14	20	15	12	11
Other grains		2	2	2	1	1
	1/ 880	773	747	736	818	790
Net imports: 2/						
Corn		10	15	7	10	6
Oats		3	1	5	3	3
Other grains		(4/)	(4/)	1	(4/)	(4/)
	3/ 167	13	16	13	13	9
Quantity available from State production	713	760	731	723	805	781

1/ Estimated total requirements.

2/ Net imports of all grains except wheat for all purposes.

3/ Estimated quantity of imports needed.

4/ Less than 0.5.

in the production of eggs, milk and beef. By necessity, the needs of chickens raised, commercial broilers, turkeys, and hogs are based upon preliminary estimates of numbers in these classes. In view of these and other uncertainties, it is probable that the consumption of feed grains will actually be somewhat different from these estimates.

Because of the heavy local demand for feed grain in the Corn Belt States, the amount shipped to the Southeastern States has been less than the demand for much of the year. In the latter part of the spring and summer little, if any, corn has been shipped in. The limited supply of corn has greatly reduced the production of meal during the summer. Feed wheat has been used to a large extent by feed manufacturers to substitute for the corn normally used. Preliminary estimates of feed wheat brought into these States up to July 1, 1943, indicate that approximately 40 percent of the estimated needs for imports of feed grain for the year have been brought into Georgia and South Carolina in this form. Only a sixth of these estimated needs have been supplied Alabama. The greatest part of this wheat arrived in April, May, and June, and it appears that considerably more will have been brought in by the end of the crop year. July reports of carry-over of corn show that stocks on hand were respectively 61,500, 124,800, and 16,200 tons less than a year earlier in Georgia, Alabama, and South Carolina. It is probable that these stocks will be reduced to the minimum before harvest this year.

REQUIREMENTS FOR COMMERCIAL MIXED FEEDS

The growth of the consumption of mixed commercial feeds in these States in recent years may be seen by comparing the figures of 1938-39 and 1941-42 in table 6. The increase in the total annual consumption between these years was 75,000 tons in Georgia, 60,000 tons in Alabama, and 66,000 tons in South Carolina. These quantities were increases of 68, 40, and 125 percent respectively of the 1938-39 consumption. They reflect a steady increase in the average feeding rates per animal in most classes of livestock except workstock. The expansion of poultry brought about the largest proportion of the increase in total consumption.

The estimate of 1942-43 requirements was made by increasing the rates for several classes of livestock by the same proportions that were used in the case of grain requirements. When the needs of the 1942-43 crop year are estimated in this way, the total quantity of commercial mixed feed needed in Georgia is 77,000 tons greater than last year, an increase of 41 percent. Likewise, 41,000 tons more are needed in Alabama and 27,000 more tons are needed in South Carolina.

Comparison of consumption by the different classes of livestock shows that poultry is responsible for the great bulk of these additional requirements for mixed commercial feed. In Georgia, hens and pullets,

Table 6.- Commercial mixed feeds in Georgia, Alabama, and South Carolina: Estimated requirements in 1942-43 and quantities comsumed in 1941-42 and 1938-39

State and class of livestock	Requirements 1942-43	Total quantity fed		Percentage	
		1941-42	1938-39	1942-43 of 1941-42	1941-42 of 1938-39
	1,000 tons	1,000 tons	1,000 tons	Percent	Percent
Georgia:					
Hens and pullets	59	44	27	134	163
Chickens raised, farm flocks	46	37	24	124	154
Broilers	82	38	6	216	633
Turkeys	1	1	1	--	--
Milk cows	31	29	21	107	138
Other cattle	9	8	6	112	133
Hogs	20	15	13	133	115
Workstock	10	10	11	100	91
Miscellaneous	5	4	2	125	200
Total	263	186	111	141	168
Alabama:					
Hens and pullets	70	53	35	132	151
Chickens raised, farm flocks	50	41	24	122	171
Broilers	5	2	--	--	--
Turkeys	1	1	1	--	--
Milk cows	43	41	29	105	141
Other cattle	12	11	7	109	157
Hogs	37	28	22	132	127
Workstock	26	26	27	100	96
Miscellaneous	5	5	3	100	167
Total	249	208	148	120	140
South Carolina:					
Hens and pullets	39	31	12	126	258
Chickens raised, farm flocks	39	31	11	126	282
Broilers	19	12	6	158	200
Turkeys	1	1	1	--	--
Milk cows	22	21	9	105	233
Other cattle	4	4	1	100	400
Hogs	13	10	5	130	200
Workstock	6	6	7	100	86
Miscellaneous	3	3	1	100	300
Total	146	119	53	123	225
Total, three States	658	513	312	128	164

chickens raised in farm flocks, and commercial broilers together require 68,000 more tons of commercial feed this year, or 88 percent of the increase indicated. Similarly, in South Carolina the same classes require a total of 23,000 tons more, or 85 percent of the increase. In Alabama 29,000 more tons are needed for poultry, or 71 percent of the total. The great expansion in commercial broiler production in Georgia is by far the greatest factor in the rise of the consumption of these feeds, as this industry apparently needs 44,000 more tons than last year. Consumption of broilers also accounts for almost a third of the increased requirements in South Carolina. The expanded needs of milk cows, other cattle, and hogs, which were estimated as somewhat more in proportion than the growth in numbers are but a minor proportion of the total increase required.

The quantities of grain and other materials in the mixed feed have been calculated for 1941-42 and 1942-43 on the basis of the estimated proportions of grain in the commercial mixed feeds for each class of livestock (table 7). The total requirement of grain in mixed feed in 1942-43 thus is 143,000 tons in Georgia; 121,000 tons in Alabama; and 73,000 tons in South Carolina. These quantities are in addition to the required amounts of grain fed as grain shown in table 4. The grain used in the manufacture of mixed feed in these states, both locally produced and imported, has been accounted for in the estimated utilization of grain from which the net quantities available for feeding as grain, shown in table 5, were calculated. 5/

The quantities of grain contained in mixed feed imported into these states, however, constitute a requirement for more grain than has been indicated. On the basis of partial information it is estimated that about half of the total mixed feed consumed in Georgia, Alabama, and South Carolina, is imported from other areas. This indicates that about 128,000 tons of grain were imported in mixed feeds in 1941-42 to these three states, and that 168,000 tons were needed for 1942-43. These quantities are the equivalent of 4,560,000 and 6,020,000 bushels of corn, respectively. These should be added to the estimates of grain imports in table 5 in order to determine the total imports of grain.

The quantity of byproduct materials used in mixed feed has increased considerably since last year (table 7). The requirement for 1942-43 in Georgia was around 29,000 more tons than in 1941-42, an increase of 32 percent; the three states together need an increase of 63,000 tons or 24 percent.

5/ Tables 14 and 15, appendix.

Table 7.- Grain and other materials in commercial mixed feeds, 1942-43 and 1941-42, Georgia, Alabama and South Carolina

State and class of livestock	Grain		Other materials	
	1942-43	1941-42	1942-43	1941-42
	1,000 tons	1,000 tons	1,000 tons	1,000 tons
Georgia:				
Hens and pullets	30	22	29	22
Chickens raised, farm flocks	28	22	18	15
Broilers	55	25	27	13
Milk cows	8	7	23	22
Other cattle	5	5	4	3
Hogs	8	6	12	9
Workstock	7	7	3	3
Miscellaneous 1/	2	1	4	4
Total	143	95	120	91
Alabama:				
Hens and pullets	35	27	35	26
Chickens raised, farm flocks	30	25	20	16
Broilers	3	1	2	1
Milk cows	11	10	32	31
Other cattle	7	7	5	4
Hogs	15	11	22	17
Workstock	18	18	8	8
Miscellaneous 1/	2	2	4	4
Total	121	101	128	107
South Carolina:				
Hens and pullets	20	16	19	15
Chickens raised, farm flocks	23	19	16	12
Broilers	13	8	6	4
Milk cows	5	5	17	16
Other cattle	2	2	2	2
Hogs	5	4	8	6
Workstock	4	4	2	2
Miscellaneous 1/	1	1	3	3
Total	73	59	73	60
Total, three States	337	255	321	258

1/ Includes feed for turkeys.

The quantities of the various materials used has assumed particular interest under present conditions because of the inadequate supplies of certain ingredients in comparison with the greater demand. It is not easy to make an estimate of this kind because of the lack of information on the production, movement, and use of these materials. A particular difficulty is the fact that the use of byproduct mill feeds for feed manufacturing differs greatly at different times and places. The composition of feeds made for concentrate-consuming poultry and hogs differs considerably from that of feeds for cattle. There is much contrast between feeds made for the same class, such as between scratch feed and mash for poultry, and between balanced dairy or hog feed and high protein supplement feed. The proportions of the different kinds of feed made vary with different companies and change with developments in the livestock situation. Manufacturers alter the composition of any given brand of feed according to the availability and relative price of different ingredients. For these reasons a good description of the quantities of the various materials used for mixed feeds made at one time may be quite in error when applied to another period.

In 1942 an inquiry was made of feed mills in Georgia in order to find the approximate quantities of the various materials that had been used in mixed feed manufacturing in 1941. The proportions found and estimated quantities used (table 8) should be considered as tentative, as complete coverage of the situation was not possible. Comparisons with published results of a similar inquiry made in the Southeastern States in 1940, 6/ show some rather obvious differences. Although the proportion of total oil meals used is comparable, the proportion of cottonseed meal used in Georgia in 1941 appears higher. On the other hand, the proportions of animal protein concentrates and wheat byproducts are considerably less. It is believed, however, that these estimates give a reasonably good general picture of the materials used.

It appears that a considerable proportion of the feeds manufactured in Georgia, about 40 percent, are sold in neighboring states. Georgia, however, buys more commercial mixed feed from outside its borders than it exports. While data are lacking about the manufacture of mixed feed in Alabama and South Carolina, it appears that the total quantity made in Alabama is somewhat less than that in Georgia, and South Carolina manufacture is roughly a third of that in Georgia. While there is no information about the proportions of materials used in the manufacture of the mixed feeds in these states, it is reasonable to suppose that they are quite similar to Georgia.

6/ Published in U. S. Dept. Agr. Circular 670: Feed Consumption by Livestock 1910-41, pp. 39-40

Table 8.- Byproduct materials used in commercial mixed feed manufacturing in Georgia, 1941

Byproduct material	Proportion of total	Quantity used
	Percent	Tons
Oil meals:		
Cottonseed meal	7.6	9,500
Linseed meal	1.7	2,100
Soybean meal	2.9	3,600
Peanut meal	5.0	6,200
Total oil meals	17.2	21,400
Animal protein products 1/	2.8	3,500
Wheat byproducts	10.9	13,600
Rice byproducts	1.6	2,000
Other grain byproducts 2/	9.5	11,800
Alfalfa and peanut hay products	4.8	6,000
Molasses and molasses feed	2.0	2,500
Beet pulp	0.2	200
Total of products listed	49.0	61,000

1/ Includes tankage, fish meal, and dried milk products.

2/ Made up largely of gluten feed, brewers' grains and distillers grains.

The greater demand for mixed feeds, together with reduced supplies of some materials, has resulted in a critical situation in the feed manufacturing business since early in the year. The supply of animal protein materials, especially important for poultry, has decreased in the face of a much enlarged need. Fish meal, which is an important source, has been reduced both because of lessened domestic fishing operations and by the shutting off of foreign sources of supply. Feed manufacturers, as a consequence, have turned to the substitution of oil meals as much as possible, adding necessary minerals to make up for nutritional deficiencies. The oil meal situation also has been very tight. Even though the cotton crop was large in 1942 and feed manufacturing uses but a small proportion of the total cottonseed meal produced, the mills have had great difficulty in getting the quantities desired.

The crushing of Northern soybeans in the cottonseed oil plants after the finishing of the cottonseed crushing has been a help in the situation. However, the share allotted to Southern use has been very eagerly sought, and has not adequately supplied the demand. The increased need for soybean meal in the Corn Belt and restrictions against shipping it into this region have prevented help from this source. Alfalfa meal, too, has been very difficult to obtain. Manufacturers have had to contend with other serious obstacles, such as: (1) the inability to obtain supplies at accustomed places; (2) greater transportation and handling costs; (3) uncertainity of deliveries; and (4) the necessity of changing formulas frequently for lack of certain ingredients. The prospects for anything but temporary improvements in this situation are small as long as the war continues.

COTTONSEED AND COTTONSEED MEAL

As the annual average production of cottonseed is more than 300,000 tons in each of these states, the seed and its byproducts are a very important part of the feeding pattern. Estimates have been made of the use of cottonseed and cottonseed meal from the data available on production, shipments, and disposition of seed and meal (table 16, appendix). Georgia has imported an average of 17,000 tons of seed annually the last 4 years, whereas Alabama and South Carolina each have shipped out a few thousand tons.

The unprocessed seed reported as used for feed and fertilizer during the last 4 years averaged 48,000 tons in Georgia; 62,000 tons in Alabama; and 46,000 tons in South Carolina. The greater part of this has undoubtedly been fed to animals, mainly cattle. In recent years

the crushing of the remainder of the seed supply is estimated to have produced an annual average of 141,000 tons of cottonseed meal (or cake) in Georgia; 128,000 tons in Alabama; and 111,000 tons in South Carolina.

In order to determine the net quantities of cottonseed meal fed as meal, allowance must be made for interstate shipments and quantities used in other ways than feeding. Georgia apparently has been importing a net quantity in the neighborhood of 26,000 tons of the meal annually in the last few years, and Alabama 22,000 tons. A large part of these inshipments come from the Mississippi Delta. South Carolina, on the other hand, normally exports about 8,000 tons. Uses of the meal for purposes other than direct feeding to livestock have taken about 18 percent of the total supply in Georgia; 13 percent in Alabama; and 29 percent in South Carolina. In Georgia, the requirements for use as fertilizer on farms, in fertilizer manufacturing, and in mixed feed manufacturing have averaged about the same. The use as fertilizer on farms is relatively less in Alabama, but is considerably more important in South Carolina. Each of the three states used much less for this purpose in 1942 than in preceding years, but estimates for 1943 show an increase to near-average levels in Georgia and Alabama and to more than average levels in South Carolina. The use in mixed feed has been increasing with the enlarging output in that industry, but these requirements are a very small proportion of the total supply.

The estimated net quantities of unmixed cottonseed meal used for feeding in 1942-43 and the average during the previous 4-year period have been distributed among the different classes of livestock as shown in table 9. It is estimated that work animals receive a very small proportion of the total and the rest is fed to cattle. The importance of the meal in cattle feeding is shown by the 4-year average quantities of 519 pounds per cow in Georgia, 437 pounds in Alabama, and 666 pounds in South Carolina. This is about 60 percent as much as the average pounds of grain fed per cow in Alabama; 90 percent as much as in Georgia; and is 15 percent more than in South Carolina. This heavy use of a high protein feed, although apparently justified by usual price relationships, is inefficient from a nutritional standpoint.

The quantity available for feeding per head was less in 1943 than average in all the States, especially in Georgia, where it was only about three-fourths as much. This is in spite of the fact that the total production of cottonseed in 1942 was somewhat above average in Georgia and Alabama. It is to be explained by the greater than usual outshipments this year. Preliminary estimates for 1942-43 indicate that South Carolina shipped out about 10,000 tons more than usual. The indicated net outshipments of Georgia and Alabama reduce the supply for feed respectively by about 36,000 and 31,000 tons from what it would have been with average imports.

Table 9.- Cottonseed meal available for feeding and estimated rates of feeding, Oct. 1, 1938 - Sept. 30, 1942, and 1942-43, Georgia, Alabama and South Carolina

Item	Georgia	Alabama	South Carolina
Quantity available for feeding:	1,000 tons	1,000 tons	1,000 tons
Annual average Oct. 1938-Sept. 1942	141	130	73
1942-43	105	122	60
Estimated rates of feeding per head Jan. 1:	Lbs.	Lbs.	Lbs.
Annual average Oct. 1938-Sept. 1942			
Milk cows	519	437	666
Other cattle	113	98	126
Workstock	39	36	36
1942-43 --			
Milk cows	383	397	541
Other cattle	75	83	92
Workstock	31	34	30

USE OF OTHER BYPRODUCT MATERIALS DIRECTLY FOR FEEDING

There is also a rather extensive use of other byproduct feeds purchased unmixed for feeding on farms in these States. Definite information is not available about these, either about the quantities used or the distribution to the various classes of animals. However, there are some indications upon which to base a preliminary estimate. This has been prepared by making comparisons of all the following kinds of evidence:

(1) State tax figures of total commercial feed sales.

(2) Quantities of mixed commercial feed manufactured locally, inshipments, and outshipments.

(3) Estimated quantities of wheat and corn byproducts made by local mills.

(4) Interstate Commerce Commission statistics of railroad carlot inshipments of this class of materials adjusted for other probable inshipments.

(5) Quantities of the different byproduct materials used in mixed feed manufacture.

(6) Opinions of livestock extension specialists and others acquainted with feeding conditions.

As a result of balancing all these factors against each other, the total tons of these materials sold unmixed to farmers in 1941-42 were estimated as follows: Georgia, 94,000; Alabama, 75,000; South Carolina, 47,000.

It is apparent that a large proportion of these byproduct feeds, probably half or more, is from wheat milling, both local and outside the area. There is also a considerable quantity of corn byproducts. Peanut meal and soybean meal, together, possibly with little linseed meal, probably made up a very few thousand tons of those totals. Soybean meal probably was used in rather important quantities in this way in 1943, but was relatively unimportant before. It appears that in 1941-42, roughly 4,000 tons of peanut meal were neither used in feed manufacture nor shipped out of Georgia. A considerable proportion of this may have been used for fertilizer manufacture.

The distribution of the materials purchased in this way among the different classes of livestock is not well known. Commercial dairymen probably use considerable quantities of the more bulky concentrate products such as wheat bran. Wheat shorts or middlings are fed extensively to hogs, especially in the mountain and Piedmont areas of these States. There is some home-mixing of feeds, although it is believed to be relatively unimportant.

An estimate of the distribution of the unmixed byproduct materials to the different classes of livestock for 1941-42 is shown in table 10. It is possible that changes in the supply situation caused important changes in the feeding of these materials in the 1942-43 crop year. The quantities that have been used, however, represent a feed need that must be met during the war period.

MISCELLANEOUS SEED CROPS FED TO LIVESTOCK

Seed crops such as peanuts, velvet beans, and uncrushed cottonseed make up an appreciable part of the total local feed supply in this region and are of major importance in the Coastal Plain Areas. Only sketchy information is available concerning the total quantities of these crops fed and it is even more difficult to estimate the distribution of these crops to the various classes of livestock. A few records from farmers, together with approximations by livestock specialists familiar with the region, provided a basis for preliminary estimates, (table 11).

Peanuts are commonly interplanted with corn for hogging off, although a considerable acreage is also planted solid for hogging. Gleanings from harvested peanut fields also provide a limited quantity of peanuts for feed. Estimates of peanuts hogged off are based mostly on reported acreages not harvested for nuts.

Velvet beans are also usually grown interplanted with corn and are mainly consumed in the fields by cattle. The corn is usually harvested before the cattle are turned in the fields. As hogs have difficulty in chewing the beans until they have become softened in the field after repeated soaking by fall rains, it is believed that a large portion of the beans are consumed by cattle. As beef cattle are important where the greatest acreages are grown, it is believed that they utilize a considerable share.

Although it is known that minor quantities of mature soybeans are cut and fed or grazed off by hogs and cattle, information on the total quantity and its use is so limited that reliable estimates could not be made.

Table 10.- Estimated rates of feeding unmixed byproduct concentrate materials, except cottonseed meal, Georgia, Alabama, and South Carolina, 1941-42

Class of livestock	Rate of feeding per head		
	Georgia	Alabama	South Carolina
	Pounds	Pounds	Pounds
Milk cows, Jan. 1	282	189	327
Other cattle, Jan. 1	50	46	58
Hogs, per cwt. produced	13	16	17
Chickens, all in farm flocks 1/	0.3	0.2	0.2

1/ Distributed equally to hens and pullets Jan. 1 and chickens raised in farm flocks.

Table 11.- Estimated quantities of cottonseed, velvet beans, cowpeas, soybeans, and peanuts consumed, per head, by livestock, October 1938 to September 1941, and 1942-43, Georgia, Alabama, and South Carolina

Crop, class of livestock, and year	Quantities consumed per head		
	Georgia	Alabama	South Carolina
	Pounds	Pounds	Pounds
Cottonseed:			
Milk cows, 4-year average	74	88	173
Do. 1942-43	75	70	94
Other cattle, 4-year average	97	119	334
Do. 1942-43	89	87	200
Workstock, 4-year average	27	34	45
Do. 1942-43	29	28	28
Velvet beans:			
Milk cows, 4-year average	469	214	149
Do. 1942-43	365	171	85
Other cattle, 4-year average	1,224	398	482
Do. 1942-43	863	294	324
Hogs, per cwt., 4-year average	32	18	9
Do. 1942-43	20	12	6
Peanuts:			
Hogs, per cwt., 4-year average	82	78	4
Do. 1942-43	96	89	9

OUTLOOK FOR FEED SUPPLIES DURING THE WAR

The prospects for locally produced grain supplies available for feeding in 1943-44, based upon the October and November crop report, are somewhat more favorable than in 1942-43 (table 12). In Georgia 124,000 more tons of corn and oats are expected than in 1942-43; in Alabama, 65,000 tons; in South Carolina, 99,000 tons. These are increases of 10, 5, and 12 percent respectively over 1942-43. The outlook for inshipments of feed grains, on the other hand, appears less favorable than during 1942-43. The November 1943 crop report for the United States as a whole shows corn production to be 3 percent less than last year and production of oats 15 percent less. With the present numbers of livestock in all parts of the country, it appears probable that even less grain will be obtainable than in 1942-43 from the regions which export grain normally. The quantity of wheat available for feeding in the country may be as great as during 1942-43 if some expected imports for this purpose materialize. Apparently, Georgia and Alabama might have as much feed grain per animal in 1943-44 as in 1942-43 if the anticipated reduction in inshipments should not be more than offset by the expected increase in feed production within the States. No doubt, this would require allocation of feed wheat in quantities equal to that used in 1942-43. But it seems more likely, however, that all sources of inshipments, including wheat, will be reduced, and the total supply of feed grain will be less. In South Carolina, the expected increase in production of grain is greater than the quantity of inshipments needed in 1942-43, so the outlook for the supply there is good.

As it is expected that the reserve supplies of feed wheat will be used up during 1943-44, livestock feeding will have to be adjusted by 1944-45 to levels that do not depend upon this source. As the quantities of other grains for inshipment will be restricted also, livestock will have to depend largely on local production, plus quantities of inshipments probably similar to those of the pre-war period.

Forecasts of production for 1944-45 and later were made in the study of maximum wartime production capacity by the Bureau of Agricultural Economics and the Agricultural Experiment Station and Extension staffs of the different States. Anticipated production of corn and oats for 1944-45 is 3 percent greater than was available for 1942-43 in Georgia and Alabama and 8 percent greater in South Carolina (table 11). This is expected to equal the 4-year average in South Carolina; to be 4 percent greater in Alabama; and to be 7 percent less in Georgia. In the estimate of wartime maximum capacity, in which it is hoped that the best possible balance of farm production will be achieved, Georgia would produce 95 percent as much of these grains as the 4-year average; Alabama, 99 percent; and South Carolina, 102 percent. From these comparisons, it is quite evident that the production of concentrate-consuming livestock after 1943-44 will necessarily be close to the average production of the period 1938-39 to 1941-42. The greater expected production of hay will result in

Table 12.- Production of corn and oats, average Oct. 1938 - Sept. 1942 1942-43, 1943-44, and estimated 1944-45 and wartime maximum, Georgia, Alabama, and South Carolina

Item	Georgia	Alabama	South Carolina
	1,000	1,000	1,000
Total production:	tons	tons	tons
Annual average, Oct. 1938 - Sept. 1942:			
Corn	1,253	1,244	688
Oats	151	52	183
Total	1,404	1,296	871
1942-43			
Corn	1,096	1,231	597
Oats	162	77	215
Total	1,258	1,308	812
1943-44 1/			
Corn	1,220	1,306	679
Oats	162	67	232
Total	1,382	1,373	911
1944-45 2/			
Corn	1,103	1,234	564
Oats	198	114	311
Total	1,301	1,348	875
Wartime maximum 2/			
Corn	1,127	1,172	528
Oats	213	114	360
Total	1,340	1,286	888
Production as percentage of 4-year average 3/:	Percent	Percent	Percent
1942-43	90	101	93
1943-44	98	106	105
1944-45	93	104	100
Wartime maximum	95	99	102
Production as percentage of 1942:			
1943-44	110	105	112
1944-45	103	103	108
Wartime maximum	106	98	109

1/ Estimated production of oats according to October, 1943 crop report. Estimate for corn based on November report.
2/ Estimated in studies of Maximum Wartime Production Capacity.
3/ Available for period Oct. 1938 - Sept. 1942.

the saving of some grain otherwise needed for roughage-consuming animals and will increase the quantity available for poultry and hogs to some extent.

Adjustments in livestock numbers in the different States in 1943-44, 1944-45 and the wartime maximum have been estimated in the maximum wartime production capacity study (table 13). In general, small or moderate increases are indicated for cattle and for classes of poultry except commercial broilers. In Alabama, chickens raised would be reduced in favor of increases in laying flocks. Larger increases anticipated in South Carolina are predicated upon a somewhat larger production of feed. A drastic reduction of 7 or 8 million commercial broilers is contemplated in Georgia, which would reduce requirements of grain by roughly 20,000 tons, and other materials 10,000 tons. The reductions indicated in the other States are less porportionally and involve much smaller numbers of birds and quantities of feed. Production of hogs is expected to increase by 17 percent next yaar in Georgia, but to drop back about to this year's level in 1944-45. In South Carolina, anticipated production of hogs in 1943-44 is 6 percent greater than in 1942-43.

The actual working out of the adjustments in livestock numbers necessarily will not be closely in line with the most desirable adjustments. It is questionable whether commercial broiler producers of Georgia can be induced to decrease their operations voluntarily by such a large proportion. It seems more likely that such a cut would have to be effected by rationing, possibly both of chicks and feed. In fact, it is not certain that the excessive upward trend in poultry numbers will be stopped until losses to growers from feed shortages or over-crowding have become sufficiently widespread. Considerable difficulty may be encountered in the adjustment in hog numbers. Spring pig numbers in 1943 were respectively 25, 28, and 12 percent greater in Georgia, Alabama, and South Carolina than in 1942. Reported breeding intentions for the fall of 1943 were respectively 28, 40, and 25 percent greater than the litter numbers of the fall of 1942. If these intentions are realized, the number of hogs in prospect to be fed out in 1943-44 will be definitely greater than in 1942-43. A severe curtailment of breeding in 1943-44 would be necessary to bring hog numbers back in line with feed supplies. It is more probable that a large number of hogs will have to be butchered at lighter weights than usual. Because of the low average butchering weight in much of the area, this is an undesirable adjustment.

Present indications are that supplies of cottonseed meal will be almost as great in 1943 as in 1942 in Georgia and Alabama, and about 6 percent greater in South Carolina. As acreages are expected to increase a little in South Carolina and stay essentially the same in Alabama, the supply of cottonseed meal should be as much as at present. In Georgia, a 13 percent reduction in acreage in 1944 may bring a reduced supply of meal.

Table 13.- Estimated livestock numbers in 1943-44, 1944-45, and wartime maximum as percentage of 1942-43, Georgia, Alabama, and South Carolina

State and class of livestock	Number as percentage of 1942-43 in:		
	1943-44	1944-45	Wartime Maximum
	Percent	Percent	Percent
Georgia			
Hens and pullets, Jan. 1	100	100	102
Chickens raised, farm flocks	103	103	104
Commercial broilers raised	57	57	59
Turkeys raised	101	101	103
Milk cows, Jan. 1	101	103	105
Other cattle, Jan. 1	101	102	103
Hogs, cwt. produced	117	102	100
Workstock, Jan. 1	96	92	89
Alabama			
Hens and pullets, Jan. 1	--	113	113
Chickens raised, farm flocks	--	84	84
Commercial broilers raised	--	90	90
Turkeys raised	--	125	130
Total cattle, Jan. 1	--	108	112
Hogs, cwt. produced	--	105	81
Workstock, Jan. 1	--	100	100
South Carolina			
Hens and pullets, Jan. 1	107	112	119
Chickens raised, farm flocks	107	112	119
Commercial broilers raised	80	80	80
Turkeys raised	106	106	106
Milk cows, Jan. 1	103	112	115
Other cattle, Jan. 1	103	111	114
Hogs, cwt. produced	106	107	107
Workstock, Jan. 1	100	100	100

In the United States the total protein for the period July 1, 1943 to June 30, 1944 is expected to be about 2 percent less than for the preceeding year. 7/ The total supply of animal protein for feed is expected to be about the same. Tankage and meat scrap supplies will be larger because of greater slaughter of livestock, but fish meal and milk products for feed will be less. The total supply of oilseed cake and meal will be larger in 1943-44 than 1942-43 because of the large increase in soybean meal. However, if a large proportion of this is converted into human food, as expected, the total of oil meals left for livestock may be reduced.

A small increase in available quantities of other mill feeds is expected. If the Southeastern States can obtain their usual share of these materials, it appears that about the same quantities of commercial feeds can be had in 1943-44 as in 1942-43. It is probable that poultry mixed feeds, with their requirement of animal protein and vegetable protein in concentrated form, cannot be increased to any appreciable extent. Dairy feeds, however, could be increased somewhat. These facts emphasize the necessity of holding poultry numbers to about the present level.

As the feed situation is likely to be critical for the duration of the war and for some time afterward, much effort will be required in this region to minimize the potential losses to livestock production. A program was sponsored jointly by the Feed Industry Council and the U. S. Department of Agriculture and adopted by the Southeastern Feed Conservation Conference in April in Atlanta. This is expected to accomplish much in bringing about the best use of feed materials by the mixed feed industry.

The allocation to the Southeast of a fair share of the nation's supplies of grain and by-product materials (including measures that will assure their delivery) is a wartime responsibility of Federal agencies. If farmers control the numbers of hogs and poultry within the limits of the probable feed supplies, a maximum of livestock production will be available to supply the wartime needs of the nation. Otherwise, it will be necessary to dispose of many animals at light weights - a wasteful practice - and to carry cows and hens along on light rations with resultant low levels of production.

7/ U.S. Dept. of Agr., BAE, Feed Situation issues of May and July 1943.

APPENDIX -

Table 14.- Corn: Production, carry-over, imports, and disposition, Georgia, Alabama, and South Carolina, 1938-39 to 1942-43

State and use	Requirements and supply, by crop years				
	1938-39	1939-40	1940-41	1941-42	1942-43
	1,000	1,000	1,000	1,000	1,000
Georgia	bushels	bushels	bushels	bushels	bushels
Quantities available:					
Farm production	53,164	36,941	46,849	42,000	39,160
Carry-over October 1, beginning of crop year	4,534	4,960	1,626	4,578	3,266
Net imports	1,090	2,655	1,991	3,679	-
Total available	58,788	44,556	50,466	50,257	-
Carry-over Sept. 30, end of crop year	4,960	1,626	4,578	3,266	3,266
Net disappearance	53,828	42,930	45,888	46,991	
Amt. used for human consumption	6,635	6,396	6,001	5,782	5,568
Amt. used for mixed feed mfg.	1,042	1,272	1,489	1,749	2,170
Amt. used for seed	578	543	532	500	500
Total not fed on farms	8,255	8,211	8,022	8,031	8,238
Net amount fed to livestock	45,573	34,719	37,866	38,960	
Alabama					
Quantities available:					
Farm production	49,700	34,080	42,648	51,228	43,960
Carry-over Oct. 1, beginning of crop year	2,747	2,934	1,498	2,725	3,269
Net imports	2,167	5,028	4,232	4,855	-
Total available	54,614	42,042	48,378	58,808	-
Carry-over Sept. 30, end of crop year	2,934	1,498	2,725	3,269	3,269
Net disappearance	51,680	40,544	45,653	55,539	
Amt. used for human consumption	7,549	7,386	7,263	6,952	6,663
Amt. used for mixed feed mfg.	893	961	1,043	1,088	1,177
Amt. used for seed	444	426	444	413	385
Total not fed on farms	8,886	8,773	8,750	8,453	8,225
Net amount fed to livestock	42,794	31,771	36,903	47,086	
South Carolina					
Quantities available:					
Farm production	26,767	25,433	23,733	22,316	21,330
Carry-over Oct. 1, beginning of crop year	1,713	2,234	1,374	2,083	1,519
Net imports	204	342	263	528	-
Total available	28,684	28,009	25,370	24,927	-
Carry-over Sept. 30, end of crop year	2,234	1,374	2,083	1,519	1,519
Net disappearance	26,450	26,635	23,287	23,408	
Amt. used for human consumption	3,618	3,496	3,206	3,111	3,023
Amt. used for mixed feed mfg.	239	257	317	374	421
Amt. used for seed	231	219	220	207	207
Total not fed on farms	4,088	3,972	3,743	3,692	3,651
Net amount fed to livestock	22,362	22,663	19,544	19,716	

APPENDIX

Table 15.- Oats: Production, carry-over, imports, and dispostion, Georgia, Alabama, and South Carolina, 1938-39 to 1942-43

State and use	Requirements and supply, by crop years				
	1938-39	1939-40	1940-41	1941-42	1942-43
	1,000	1,000	1,000	1,000	1,000
Georgia	bushels	bushels	bushels	bushels	bushels
Quantities available:					
Farm production	9,585	8,946	8,702	10,516	10,152
Carry-over July 1	519	958	626	261	526
Net imports	837	1,175	971	515	--
Total available	10,941	11,079	10,299	11,292	--
Carry-over June 30	958	626	261	526	526
Net disappearance	9,983	10,453	10,038	10,766	
Amt. used for mixed feed manufacturing	286	349	408	479	594
Amt. used for seed	928	940	1,088	1,292	1,227
Total not fed on farms	1,214	1,289	1,496	1,771	1,821
Net amt. fed to livestock	8,769	9,164	8,542	8,995	
Alabama					
Quantities available:					
Farm production	3,168	2,838	2,600	4,400	4,800
Carry-over July 1	169	190	71	208	352
Net imports	885	1,250	770	775	--
Total available	4,222	4,278	3,441	5,383	--
Carry-over June 30	190	71	208	352	
Net disappearance	4,032	4,207	3,233	5,031	
Amt. used for mixed feed manufacturing	244	253	286	336	364
Amt. used for seed	294	294	290	386	309
Total not fed on farms	538	547	576	722	673
Net amt. fed to livestock	3,494	3,660	2,657	4,309	
South Carolina					
Quantities available:					
Farm production	10,648	11,515	11,395	12,100	13,461
Carry-over July 1	403	692	633	342	363
Net imports	214	206	282	35	--
Total available	11,265	12,413	12,310	12,477	--
Carry-over June 30	692	633	342	363	363
Net disappearance	10,573	11,780	11,968	12,114	
Amt. used for mixed feed manufacturing	92	99	122	144	162
Amt. used for seed	990	1,036	1,096	1,140	1,140
Total not fed on farms	1,082	1,135	1,218	1,284	1,302
Net amt. fed to livestock	9,491	10,645	10,750	10,830	

APPENDIX

Table 16.- Supplies and disposition of cottonseed and cottonseed meal by crop years 1938-39 to 1942-43
Georgia, Alabama, and South Carolina

State and Item	1942-43 1/	Av. 1938-39 to 1941-42	1941-42	1940-41	1939-40	1938-39
Georgia	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons
Cottonseed						
Total production	385	378	278	449	407	378
Net imshipments	9	17	18	15	16	20
Total supply	394	395	296	464	423	398
Used for seed	31	34	31	33	35	35
Used for feed and fertilizer	49	48	22	66	62	43
Total not processed	80	82	53	99	97	78
Net supply for crushing	314	313	243	365	326	320
Cottonseed meal:						
Estimated production in State 2/	141	141	109	164	147	144
Net inshipments	3/-10	26	33	23	25	25
Total supply	131	167	142	187	172	169
Uses other than feeding unmixed:						
Fertilizer on farms	7	9	4	13	9	12
Fertilizer manufacturing	8	8	8	8	8	8
Mixed feed manufacturing	11	9	11	9	8	7
Total uses other than feed:	26	26	23	30	25	27
Net use for feed	105	141	119	157	147	142

Continued -

Table 16.- Supplies and disposition of cottonseed and cottonseed meal by crop years, 1938-39 to 1942-43
Georgia, Alabama, and South Carolina - Cont'd

State and item	1942-43 1/	Av. 1938-39 to 1941-42	1941-42	1940-41	1939-40	1938-39
Alabama	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons
Cottonseed:						
Total production	413	382	352	347	349	480
Net inshipments	3/ -4	3/ -2	3/ -6	(4/)	(4/)	(4/)
Total supply	409	380	346	347	349	480
Used for seed	27	34	30	32	36	37
Used for feed and fertilizer	51	62	47	65	68	68
Total not processed	78	96	77	97	104	105
Net supply for crushing	331	284	269	250	245	375
Cottonseed meal:						
Estimated production in State 2/	149	128	121	112	110	169
Net inshipments	3/ -9	22	12	37	30	10
Total supply	140	150	133	149	140	179
Uses other than feeding unmixed						
Fertilizer on farms	3	5	1	7	3	8
Fertilizer manufacturing	8	8	8	8	8	8
Mixed feed manufacturing	7	7	8	8	7	7
Total uses other than feed	18	20	17	23	18	23
Net use for feed	122	130	116	126	122	156

Continued -

APPENDIX

Table 16.- Supplies and disposition of cottonseed and cottonseed meal by crop years 1938-39 to 1942-43
Georgia, Alabama, and South Carolina - Cont'd.

State and item	1942-43 1/	Av. 1938-39 to 1941-42	1941-42	1940-41	1939-40	1938-39
South Carolina	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons
Cottonseed:						
Total production	311	321	180	430	387	288
Net inshipments	3/ -4	3/ -5	3/ -3	3/ -8	3/ -6	3/ -5
Total supply	307	316	177	422	381	283
Used for seed	23	23	22	23	24	24
Used for feed and fertilizer	28	46	23	57	58	44
Total not processed	51	69	45	80	82	68
Net supply for crushing	256	247	132	342	299	215
Cottonseed meal:						
Estimated production in State 2/	115	111	59	154	134	97
Net inshipments	3/ -18	3/ -8	3/ -2	3/ -21	3/ -5	3/ -2
Total supply	97	103	57	133	129	95
Uses other than feeding unmixed:						
Fertilizer on farms	29	22	4	34	22	27
Fertilizer manufacturing	5	5	5	5	5	5
Mixed feed manufacturing	3	3	3	3	2	2
Total uses other than feed	37	30	12	42	29	34
Net use for feed	60	73	45	91	100	61

1/ Most figures preliminary. 2/ Estimated as 45 percent of total crushed. 3/ Net outshipments.
4/ Less than 500 tons.